DOCUMENT RESUME

ED 476 994 IR 021 722

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TITLE	There Is Still Hope for ICT in Flanders Fields. ICT in Education: The Use, Benefits, Barriers and Expectations as Perceived by Educators at Flemish Universities.
PUB DATE	2002-06-00
NOTE	7p.; In: ED-MEDIA 2002 World Conference on Educational Multimedia, Hypermedia & Telecommunications. Proceedings (14th, Denver, Colorado, June 24-29, 2002); see IR 021 687.
AVAILABLE FROM	Association for the Advancement of Computing in Education (AACE), P.O. Box 3728, Norfolk, VA 23514. Tel: 757-623-7588; e-mail: info@aace.org; Web site: http://www.aace.org/DL/.
PUB TYPE	Reports - Research (143) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01/PC01 Plus Postage.
DESCRIPTORS	*Computer Assisted Instruction; *Computer Mediated Communication; *Computer Uses in Education; Educational Policy; Educational Practices; *Educational Technology; Foreign Countries; Higher Education; Student Attitudes; *Teacher Attitudes; *Teaching Methods; Technology Integration
IDENTIFIERS	Belgium

ABSTRACT

This paper presents the main research findings of a large scale investigation about the state of the art in information and communications technology (ICT) use for educational purposes in Belgium, and specifically the current situation in Flemish universities. The main focus is on user characteristics and the attitudes of educators. Questions asked include: How do educators use ICT in their teaching practices? How do they perceive the support given by faculties within the framework of overall university policy? Which problems and barriers do they encounter? By means of an online survey, opinions were collected in order to reveal which factors play a role in the decision to adopt ICT. This investigation reveals how ICT is used in a non-innovative way in Flemish universities. (Author)

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Abstract: In this paper we present the main research findings of a large scale investigation about the state of the art in ICT use for educational purposes in Belgium, and specifically the current situation in Flemish universities. The main focus is on user characteristics and the attitudes of educators. Questions asked include: How do educators use ICT in their teaching practices? How do they perceive the support given by faculties within the famework of overall university policy? Which problems and barriers do they encounter? By means of an online survey we collected opinions in order to unravel which factors play a role in the decision to adopt ICT. This investigation reveals how ICT is used in a non innovative way in Flemish universities.

Theoretical Background

Educators play a crucial role in the adoption and implementation of new technologies in universities. New means of transmitting knowledge are only used if they offer clear advantages with respect to the old familiar teaching methods and enhance flexibility, efficiency and effectiveness (Collis et al., 1999), means to cope with information sources (Veen et al., 1999), ways to develop individual learning paths (Gehl, 1996), better student-educator communication (Twigg, 1995) and responsiveness (Hatfield, 1997). Previous research indicates that teachers reveal a variety of attitudes towards the introduction of ICT:

Attitude	Short description
Neutralitarian	Usually users of ICT as a tool
Booster	Unconditional believers and pioneers
Oppositional	Technophobe, fearing encroaching on human values
Sceptic	Those waiting for clear results before engaging
Transformationalist	Those considering changes as necessary but studying ICT carefully before its implementation

Table 1: Categories of educators' attitudes (Source: Evans, 2000)

The fear of the unknown, the tendency to consider the existing situation as a good one, a feeling of solitude caused by a lack of support and knowledge, and a reluctance towards self reflection can influence these intermixed attitudes (Hagner, 2000). Collis et al. (1999) developed the 4E model to predict the chance an educator will adopt ICT, based on the following concepts: (1) environment, (2) (perceived) educational effectiveness, (3) ease of use and (4) (personal) engagement.

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Evidently, institutional policy plays also an important role in the motivation of the educator. The university approach can be either top-down or bottom-up and based on different points of view (Collis et al., 1999). We quote (1) proactive (driven by image building and market share), (2) reactive (driven by response to demand), (3) transformative (student centred) and (4) speculative (driven by hope in improvement efficiency and/or effectiveness) professional contexts.

The barriers opposing the introduction of ICT in higher education were thoroughly investigated in The Netherlands. According to Veen et al. (1999) the most relevant ones, in order of importance, are: a lack of time, skills, adequate infrastructure, support and rewards.

Research objectives and methodology

Besides general computer use and training, the following themes were studied at six Flemish universities: the perception of university and faculty policy, educators' types of ICT use and attitudes towards ICT implementation, including perceived advantages and benefits. A self-administered questionnaire was delivered via a database driven website to all teachers in the humanities faculties (N= 2244). They belonged to the departments of arts, law, economy, applied economy, business, political and social sciences, communication, psychology, educational sciences and theology.

Results

Profile of the respondents

442 candidates completely filled in the questionnaire (approximately 20% response). Two thirds of the respondents are teaching assistants, one third lecturers. 61% of the respondents are male, 39% female. It is noteworthy that the male/female proportion is about fifty-fifty up to the age of forty. The age distribution is as follows: 20-30 51%, 30-40 21%, 40-50 15%, older than 50 13%. Female respondents are almost absent in the highest age category.

ICT skills and training

A very small fraction of the respondents is not able to handle computers, operation systems and general applications like word processing. Similarly, e-mail, digital information systems and internet applications are unknown to only a very small group (respectively 4.3%, 3.2% and 5%). The overwhelming success of the internet is not induced by educational puposes but used for research. CD Rom use is not frequent (as expected), except in situations where it is imposed by research. The consultation of electronic teaching media (databases, courseware, communication facilities, etc.) is not common. Merely 8.9% of the teachers use them daily, while 76% almost never or seldom get in touch with these media.

	Internet resources	CD Rom	Electronic teaching material
almost never	0.9%	28.0%	41.9%
from time to time	7.2%	44.9%	34.2%
weekly	20.6%	18.2%	14.7%
daily	71.3%	8.9%	8.9%

Table 2: Use of internet resources, CD-ROM and electronic teaching material

These ICT skills are mainly acquired via personal study and practical experience. Mainly younger educators had specific computer training at school or university. On encountering problems they tend to rely on colleagues.

Influence of university and faculty

Both the general use of computers and e-mail is heavily stimulated by the university or faculty (73,5% and 76%). On the other hand, educators do not report receiving much support when experimenting with ICT for educational goals. Significant differences between universities exist.

	General computer use	Use of e-mail	Use of ICT for educational goals
no	4.1%	1.4%	26.4%
some	9.3%	8.6%	35.4%
yes	73.5%	76.0%	36.6%
imposed	13.1%	14.0%	1.6%

Table 3: Stimulation by the university or faculty

ICT policy

Although all Flemish universities have official ICT policy plans and coordinators, only a part of the educators are well informed about these initiatives. Clearly, a lack of communication lies behind this.

Does the university or faculty have an ICT policy plan?		Is there an ICT coordinator or manager?	
yes	33.8%	yes	60.2%
no	5.4%	no	4.8%
don't know	60.8%	don't know	35.0%

Table 4: Policy plan and ICT coordinators

Educational use of ICT

One third of the educators use ICT for educational purposes. Table 5 shows the present use and objectives:

Use		Objectives	
not used	32.4%	eliminate shortcomings	11.0%
as an help tool	33.7%	extend exercises	29.7%
in the learning process	8.3%	substitution for exercises	10.7%
tool and learning process	23.1%	extend seminars	22.4%
don't know	2.5%	substitution for seminars	6.6%
		extend courses	26.2%
		substitution for courses	8.3%
		other	13.4%

Table 5: Present use and objectives

The left half of table 5 must be interpreted with caution because it appears that many respondents are not aware of the distinction between the use of ICT as an help tool and its capacity as a learning support.

Motivation

When considering the motivations teachers rate as important and very important for adopting ICT in teaching environments, they mainly want to increase the effectivity of their education. Secondly, they intend to promote autonomous study, enhance flexibility and create new educational contexts by means of ICT. Thirdly, they are motivated by enhancing the students' motivation and stimulating contacts between student and educator.

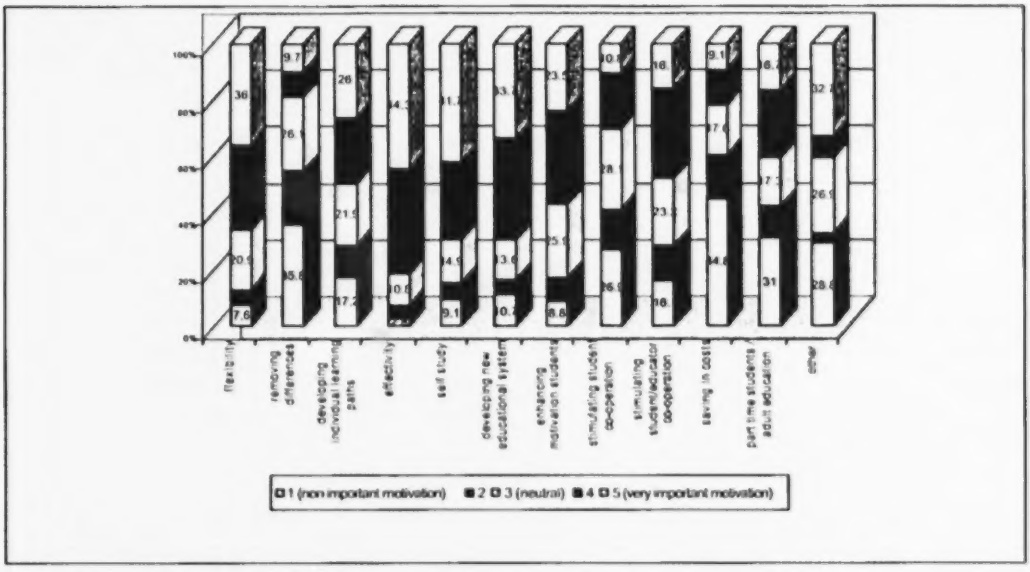

Figure 1: Motivation for ICT use

Desired use in the future

Substituting traditional classes is very unpopular. A clear majority of the respondents do not want to replace lectures, seminars and exercises by ICT supported activitities. They are more likely to use ICT to extend these teaching activities. As far as testing and remedying deficiencies are concerned it can be noted that about half the educators are not willing to apply ICT.

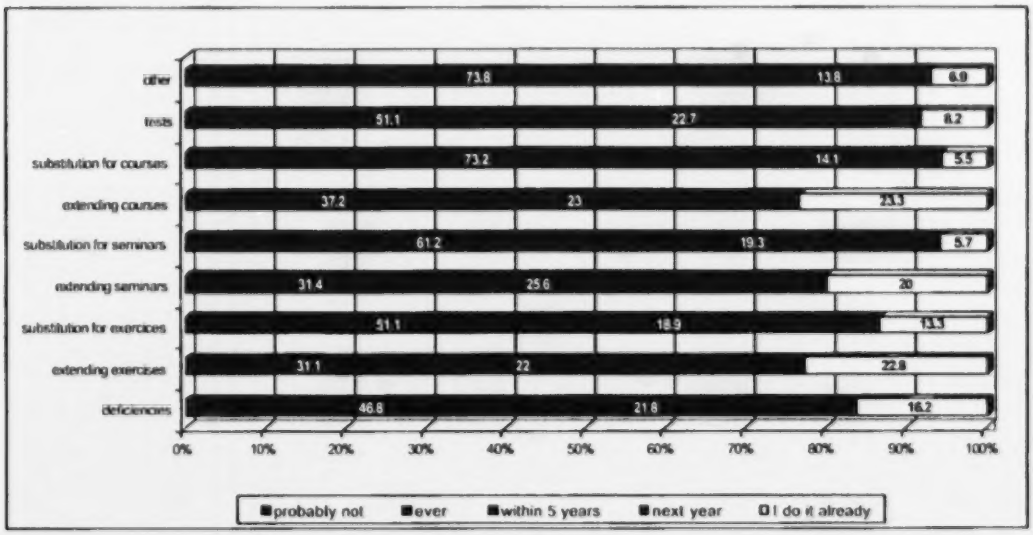

Figure 2: Desired use of ICT

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Barriers

When asked to point out the barriers for adopting ICT in teaching environments, the educators reported the following problems (in order of importance):

1. lack of time;
2. fear of loosing personal contacts with students (wich surprisingly appears not te be age related)
3. lack of skills, manpower support and adequate infrastructure;
4. problems caused by technical items and software;
5. lack of interest of students;
6. high costs;
7. introduction of ICT felt as a bad educational evolution
8. lack of university policy.

Only items (2), (5) and (7) refer to pedagogical aspects of computer supported education, the other are related to personal and materialistic factors.

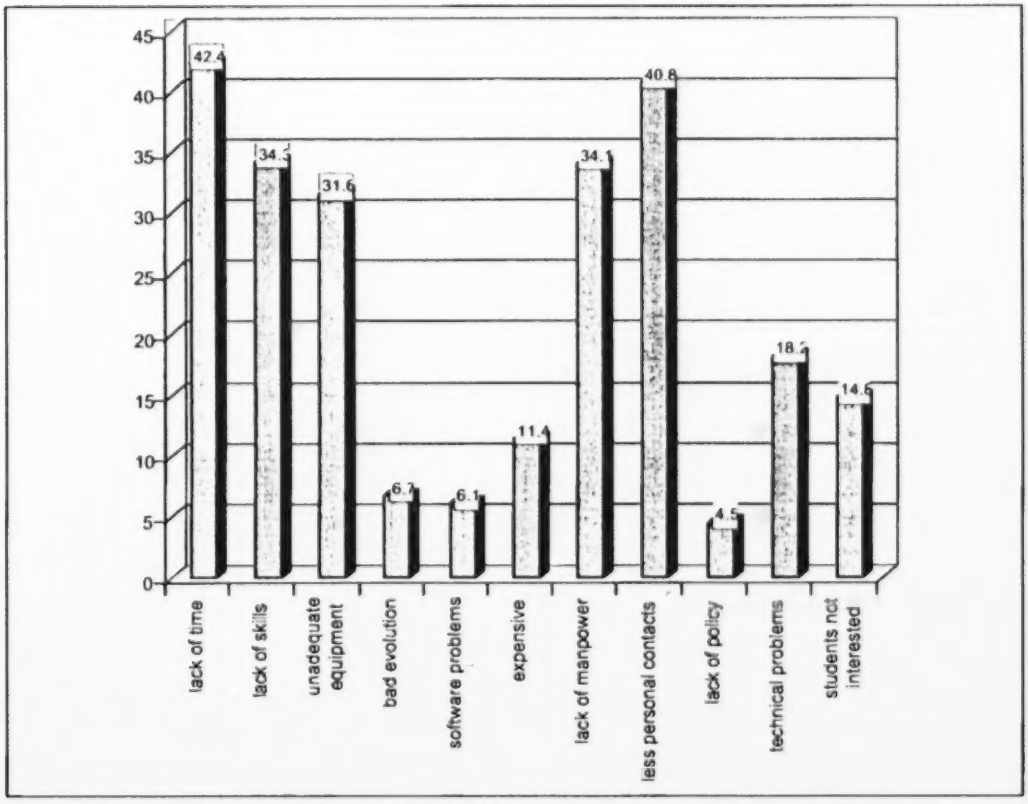

Figure 3: Perceived disadvantages of ICT (barriers)

Conclusions

This study shows that ICT is used in a rather non-innovative way in Flemish universities. The advantages of different technologies are well understood as far as communication, information gathering and distribution are concerned. But a vast majority of the educators surveyed do not grasp the rich possibilities ICT can offer in

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supporting or improving their teaching practices. Moreover, the teachers investigated perceive many practical and technical barriers for a succesful integration of ICT in educational settings. Universities should play a more important role in offering relevant information and stimulating educators, not only in a passive but in an active way. Possible "solutions" include: awareness raising, appropriate training and support - both technical and pedagogical – and new, strong policies with a long-term vision on educational renewal rather than a policy based on ad hoc decisions and actions.

There is still hope for Flanders Fields. Small groups of innovators are disseminating their knowledge and positive experiences to their colleagues and helping to influence university policymakers.

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